CLAIMS

1. A method suitable for facilitating disease diagnosis, the method comprising the steps of:

exposing cells of a suspected diseased patient to a chromosome damaging agent selected to damage chromosomes within the nuclei of the cells to produce chromosome fragments;

marking at least some of the chromosome fragments; and

analyzing the marked chromosome fragments to determine whether the cells were affected by the disease.

2. The method suitable for facilitating disease diagnosis of claim 1, further comprising the step of culturing the cells.

3. The method suitable for facilitating disease diagnosis of claim 2, wherein said culturing step includes exposing the cells to a mitogen for a period of about 36 to about 120 hours.

4. The method suitable for facilitating disease diagnosis of claim 1, further comprising the step of fixing the nuclei of the cells to a slide.

5. The method suitable for facilitating disease diagnosis of claim 1, further comprising the step of exposing the chromosome fragments to a repair retarding agent.

6. The method suitable for facilitating disease diagnosis of claim 1, wherein said exposing step includes producing 3' –OH strands.

7. The method suitable for facilitating disease diagnosis of claim 1, wherein said exposing step includes damaging the chromosomes with a chemical reagent.

8. The method suitable for facilitating disease diagnosis of claim 1, wherein said marking step includes adding fluorescent material to at least some of the chromosome fragments.

Sub C2

9. The method suitable for facilitating disease diagnosis of claim 1, wherein said marking step includes adding dNTP to at least a portion of the chromosome fragments and exposing the fragments to fluoresceinated material.

10. The method suitable for facilitating disease diagnosis of claim 1, wherein said analyzing step includes automatically measuring a number of marked chromosome fragments.

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11. A method for analyzing an effect of disease on cells, the method comprising the steps of:

preparing cells suspected of being diseased by exposing the cells to a chromosome breakage agent to form chromosome pieces within nuclei of the cells;

marking at least a portion of the chromosome pieces;

counting a number of marked chromosome pieces.

12. The method for analyzing an effect of disease on cells of claim 11, further comprising the step of exposing the cells to a chromosome repair retarding agent.

13. The method for analyzing an effect of disease on cells of claim 11, further comprising the step of exposing the cells to a chromosome damaging agent.

14. The method for analyzing an effect of disease on cells of claim 11, further comprising the step of comparing cells suspected of being affected by the disease to cells thought not to be affected by the disease.

15. The method for analyzing an effect of disease on cells of claim 11, wherein said exposing step includes forming 3'— OH ends of DNA strands.

16. A method suitable for facilitating diagnosis of Alzheimer's disease, the method comprising the steps of:

exposing cells thought to be affected by Alzheimer's disease to a chromosome damaging agent;

exposing the cells thought to be affected by Alzheimer's disease to a chromosome breakage agent to form chromosome pieces;

marking at lease some of the chromosome pieces; and

measuring an amount of marked chromosome pieces.

17. The method suitable for facilitating diagnosis of Alzheimer's disease of claim 16, the method further comprising the steps of:

exposing cells thought to be unaffected by Alzheimer's disease to a chromosome damaging agent;

exposing the cells thought to be unaffected by Alzheimer's disease to a chromosome breakage agent to form chromosome pieces;

marking at lease some of the chromosome pieces of cells thought to be unaffected by Alzheimer's disease;

measuring an amount of marked chromosome pieces present within the cells thought to be unaffected by disease; and

comparing a number of marked chromosome pieces present in the cells thought to be affected by the disease to a number of marked chromosomes pieces present in the cells thought to be unaffected by the disease.